

What is claimed is:

1. A method for manufacturing integrated circuits meeting customer special requirements with multiple subcontractors in remote locations, comprising the steps of:

- 5 receiving a customer transaction file via the Internet;
extracting a set of customer special requirements from said transaction file;
updating a customer rule set database with the set of customer special requirements;
selecting wafers in a die bank database in accordance with said customer rule set database;
10 validating special release requirements for said selected wafers in accordance with an assembly capability database; and
issuing electronic die release orders for said wafers to a plurality of subcontractors.

2. The method of claim 1, further comprising the steps of:

- 15 retrieving wafer data from foundry subcontractors via the Internet;
retrieving die bank lot details from a shop floor management system;
mapping said wafer data to said die bank lot; and
updating said die bank database with said wafer data.

3. The method of claim 1, further comprising the steps of:

- 20 retrieving assembly capability data from a corporate planning system;
retrieving manufacturing document data from a document control system; and
updating said assembly capability database with said assembly capability data and said manufacturing document data.

4. The method of claim 1, wherein selecting wafers in a die bank database further comprises the steps of:

- 25 identifying wafers that meet customer special requirements in accordance with information obtained from a wafer test system;
30 tagging said wafers; and

updating said die bank database.

5. The method of claim 1, wherein validating special release parameters comprises the steps of:

5 retrieving customer special release details from said customer rule set database;
retrieving assembly capabilities of subcontractors from said assembly capability database;
and
validating said customer special release details against said assembly capabilities of
subcontractors.

10 6. The method of claim 1, wherein issuing electronic die release orders to a plurality of subcontractors comprises the steps of:

generating an electronic die release order file for said selected wafers and said validated
special release requirements; and

15 transferring said electronic die release order file to subcontractors via the Internet.

7. The method of claim 1, wherein said customer special requirements contain at least
one parameter selected from the group consisting of n-channel breakdown voltage, n-channel
saturation current, p-channel saturation current, n-channel threshold voltage, p-channel
20 threshold voltage, yield before bake and yield after bake.

8. A computer readable medium carrying one or more sequences of one or more
instructions for manufacturing integrated circuits meeting customer special requirements with
25 multiple subcontractors in remote locations, wherein the execution of the one or more
sequences of the one or more instructions causes the one or more processors to perform the
steps of:

receiving a customer transaction file via the Internet;

extracting a set of customer special requirements from said transaction file;

30 updating a customer rule set database with the set of customer special requirements;

selecting wafers in a die bank database in accordance with said customer rule set database;
validating special release requirements for said selected wafers in accordance with an assembly capability database; and
5 issuing electronic die release orders for said wafers to a plurality of subcontractors.

9. The computer readable medium of claim 8 further comprising sequences of instructions for performing the steps of:

retrieving wafer data from foundry subcontractors via the Internet;
10 retrieving die bank lot details from a shop floor management system;
mapping said wafer data to said die bank lot; and
updating said die bank database with said wafer data.

10. The computer readable medium of claim 8 further comprising sequences of instructions for performing the steps of:

retrieving assembly capability data from a corporate planning system;
retrieving manufacturing document data from a document control system; and
15 updating said assembly capability database with said assembly capability data and said manufacturing document data.

20 11. The computer readable medium of claim 8, wherein the instructions for performing the step of selecting wafers in a die bank database comprise instructions for performing the steps of:

identifying wafers that meet customer special requirements in accordance with
25 information obtained from a wafer test system;
tagging said wafers; and
updating said die bank database.

12. The computer readable medium of claim 8, wherein the instructions for performing the step of validating special release parameters comprise instructions for performing the steps of:

retrieving customer special release details from said customer rule set database;
5 retrieving assembly capabilities of subcontractors from said assembly capability database;
and
validating said customer special release details against said assembly capabilities of subcontractors.

10 13. The computer readable medium of claim 8, wherein the instructions for performing the step of issuing electronic die release orders to a plurality of subcontractors comprise instructions for performing the steps of:

generating an electronic die release order file for said selected wafers and said validated special release requirements; and

15 transferring said electronic die release order file to subcontractors via the Internet.

14. The computer readable medium of claim 8, wherein said customer special requirements contain at least one parameter selected from the group consisting of n-channel breakdown voltage, n-channel saturation current, p-channel saturation current, n-channel
20 threshold voltage, p-channel threshold voltage, yield before bake and yield after bake.

15. A system for manufacturing integrated circuits meeting customer special requirements with multiple subcontractors in remote locations, the system comprising:

at least one processing unit for executing computer programs;

25 at least one user interface for communicating with said computer programs;

at least one network interface for exchanging information with file servers and subcontractor computer systems, the information exchanged including information concerning manufacturing databases;

a manufacturing automation execution module including one or more computer programs,
30 said computer programs including instructions for:

receiving a customer transaction file via the Internet;
extracting a set of customer special requirements from said transaction file;
updating a customer rule set database with the set of customer special requirements;
selecting wafers in a die bank database in accordance with said customer rule set
5 database;
validating special release requirements for said selected wafers in accordance with an
assembly capability database; and
issuing electronic die release orders for said wafers to a plurality of subcontractors.

10 16. The system of claim 15, wherein the computer programs of said manufacturing
automation execution module further include instructions for:

retrieving wafer data from foundry subcontractors via the Internet;
retrieving die bank lot details from a shop floor management system;
mapping said wafer data to said die bank lot; and
15 updating said die bank database with said wafer data.

17. The system of claim 15, wherein the computer programs of said manufacturing
automation execution module further include instructions for:

retrieving assembly capability data from a corporate planning system;
20 retrieving manufacturing document data from a document control system; and
updating said assembly capability database with said assembly capability data and said
manufacturing document data.

18. The system of claim 15, wherein the instructions for performing the step of selecting
25 wafers in a die bank database include instructions for:

identifying wafers that meet customer special requirements in accordance with
information obtained from a wafer test system;
tagging said wafers; and
30 updating said die bank database.

19. The system of claim 15, wherein the instructions for performing the step of validating special release parameters include instructions for:

retrieving customer special release details from said customer rule set database;
retrieving assembly capabilities of subcontractors from said assembly capability database;
5 and
validating said customer special release details against said assembly capabilities of subcontractors.

20. The system of claim 15, wherein the instructions for performing the step of issuing electronic die release orders to a plurality of subcontractors include instructions for:

generating an electronic die release order file for said selected wafers and said validated special release requirements; and
transferring said electronic die release order file to subcontractors via the Internet.

21. The system of claim 15, wherein said customer special requirements contain at least one parameter selected from the group consisting of n-channel breakdown voltage, n-channel saturation current, p-channel saturation current, n-channel threshold voltage, p-channel threshold voltage, yield before bake and yield after bake.

22. A system for manufacturing integrated circuits with multiple subcontractors in remote locations, the system comprising:

at least one processing unit for executing computer programs;
at least one user interface for communicating with said computer programs;
at least one network interface for exchanging information with subcontractor systems and foundry systems via the Internet, the information exchanged including information
25 concerning manufacturing databases;
a manufacturing automation execution module including one or more computer programs, said computer programs including instructions for:
receiving detail wafer data from said foundry systems;

maintaining tester capacity and spare part inventory in accordance with forecasts received from said subcontractor systems;

managing material supply in accordance with inventory levels and materials on order data received from said subcontractor systems;

5 forecasting assembly and test capabilities of said subcontractors;

managing the availability of reworked components in accordance with rework reports received from said subcontractors;

tracking work-in-progress status of outstanding customer orders in accordance with updates received from said subcontractors; and

10 issuing electronic die release orders for manufacturing integrated circuit devices to said subcontractor systems.

23. The system of claim 22 further comprising:

15 a corporate planning subsystem for determining assembly and test volume allocations to each subcontractor in accordance with predetermined qualifications of said subcontractor;

a shop floor management subsystem for tracking lot movements in accordance with a predefined series of routes;

a document control subsystem for maintaining specifications of said subcontractors manufacturing technologies, integrated circuit packages and testing capabilities;

20 a manufacturing parameter subsystem for maintaining assembly-qualified sites and their corresponding device process capabilities; and

a wafer test subsystem for testing wafers in the wafer sort process in accordance with customer requirements.

25 24. The system of claim 22 further comprising:

a die bank database for storing details of wafer lots available in manufacturer's die bank;

an assembly capability database for storing qualified assembly information of said subcontractors with respect to certain integrated circuit devices;

a die release database for storing assembly and test instructions to said subcontractors;

a subcontractor work-in-progress (WIP) database for storing the work-in-process details of outstanding die orders at said subcontractors' sites; and
a customer rule set database for storing customer special requirements for certain integrated circuit devices.

5